

SOME curious experiments on the expansion of liquids to lamellae, have recently been described by M. Cintolesi in the *Rendiconti Reale Istituto Lombardo*. He considers that the phenomenon is always accompanied with a development of gaseous masses; further, that the spreading out of liquids on each other is caused by the vapours of the substances, whose molecules moving in every direction force the liquid molecules out from each other horizontally, and, where the resistance of the liquid is not strong enough, rupture the film.

IN his thermo-chemical researches on gold and its compounds, M. Julius Thomsen has observed that gold separated out from different solutions and by dissimilar reducing agents presents allotropic differences, three of which he has studied:—1. Reduced from chloride solution with sulphurous acid, gold forms a balled mass. 2. Reduced similarly from the bromide solution, it forms a very fine dark powder, which retains its powder form even after drying. 3. Reduced from the chloruret, bromuret, or ioduret, with sulphurous acid or hydrogen acid, it forms a very fine powder with metallic brilliancy and yellow colour. These modifications are also distinguished by unequal heat-energy in the several reactions.

FROM careful measurements during 1871 and 1872, it appeared that the quantity of water annually flowing past in the Elbe, at the boundary between Saxony and Bohemia, was about 6,179 million cubic metres. M. Breitenlohner, considering the quantity along with analyses he made of Elbe water in 1866, has calculated the amount of solid matter carried away by the Elbe out of Bohemia every year. His estimate is, for suspended matters carried off, 547·14 million kilogrammes, dissolved matters, 622·68 million kilogrammes (of which 977·7 million were fixed, and 191·12 million volatile), giving a total of 1169·82 million kilogrammes of solid substances carried off. The numbers are also interesting which indicate the proportions of substances important to agriculture that are thus removed from Bohemia. In the 6 milliards of cubic metres of Elbe water, there are partly, suspended, partly dissolved, 140·38 million kilogrammes lime, 28·13 million kilogrammes magnesia, 54·52 million kilogrammes potash, 39·6 million kilogrammes soda, 25·32 million kilogrammes chloride of sodium, 45·69 million kilogrammes sulphuric acid, and 1·5 million kilogrammes phosphoric acid. The Elbe has a basin of about 880 square miles in Bohemia.

AN essay on the Wines and Wine Industry of Australia, by Rev. Dr. J. I. Bleasdale (Melbourne: Baillière), contains a great deal of information on a subject of much industrial and economic interest.

PART I. of Vol. III. of the *Transactions* of the Connecticut Academy of Arts and Sciences is a thick one, and is profusely illustrated with well-executed plates. The papers are:—"Reports on the Dredgings in the Region of St. George's Banks in 1872," by Messrs. L. J. Smith and O. Harger; "Descriptions of New and Rare Species of Hydroids from the New England Coast," by Mr. S. F. Clark; "On the Chondrodite from the Tilly-Foster Iron-Mine, Brewster, N.Y.," by Prof. E. S. Dana; "On the Transcendental Curves  $\sin y \sin my = a \sin x \sin nx + 6$ ," by Professors H. A. Newton and A. W. Phillips; "On the Equilibrium of Heterogeneous Substances," by Prof. J. Willard Gibbs.

WE have received Part 4 of the *Transactions* of the Glasgow Society of Field Naturalists, containing an account of the proceedings for 1875-6. The part contains many valuable papers in natural history, the results of original observations, and we regret that want of space prevents us referring to them in detail.

THERE are several papers of considerable value in the last-issued part of the *Transactions* (vol. iii. No. 2) of the Academy of Science of St. Louis, and we regret that our space will admit

of our giving only the titles:—"Iron Manufacture in Missouri; a General Review of the Metallurgical Districts and their Resources," by Dr. A. Schmidt; "Remarks on Canker-worms, and Description of a New Genus of Phalænidæ," by Prof. C. V. Riley, who also contributes "Notes on the Natural History of the Grape Phylloxera (*P. vastatrix*)," and "Notes on the Yucca Borer (*Megathymus yuccæ*, Walk.);" "On a New Form of Lecture Galvanometer," by Prof. Nipher; Dr. G. Engelmann contributes "Notes on Agave (with photographic illustrations)," and "About the Oaks of the United States;" "The Rocky Mountain Locusts and the Season of 1875," by Mr. G. C. Broadhead, who also contributes papers on "The Meteor of Dec. 27, 1875," and on the "Age of our Porphyries;" Mr. A. J. Conant has a paper on the "Archæology of Missouri." The latter part of the number is occupied with the Journal of Proceedings.

IN the *Penn Monthly*, a Philadelphia publication, for May and June are two interesting articles by Mr. C. E. Dutton containing "Critical Observations on Theories of the Earth's Physical Revolution."

THE additions to the Zoological Society's Gardens during the past week include two Bonnet Monkeys (*Macacus radiatus*) from India, presented by Mr. Chas. E. Green and Mr. R. K. Meaden; a Macaque Monkey (*Macacus cynomolgus*) from India, presented by Capt. J. C. A. Lewis; a Striped Hyæna (*Hyæna striata*) from Algeria, presented by Mr. Thos. Barber; an Arabian Gazelle (*Gazella arabica*) from Arabia, presented by Mr. F. de Havilland Hall; a Grey Ichneumon (*Herpestes griseus*) from India, presented by Mr. Geo. J. Hendry; a Common Boa (*Boa constrictor*) from South America, presented by Mr. F. B. Bloxham; a Red and Yellow Maccaw (*Ara chloroptera*) from South America, deposited; a Hog Deer (*Cervus porcinus*), born in the Gardens.

## SCIENTIFIC SERIALS

*American Journal of Science and Arts*, September.—In a second paper on the gases contained in meteorites, Mr. Wright first describes those of the Kold Bokkeveld stony meteorite, one of a distinct class containing a good deal of amorphous carbon, a bituminous substance, and very little metallic iron. The volume of the gases obtained was much greater, but the gaseous mixture was like that of ordinary stony meteorites, except in the very small quantity of hydrogen present. A comparative table is given of the gases of seven iron and six stony meteorites. From experiments on the manner of occurrence of carbon dioxide, the author infers that while some of the gas may be condensed on the fine particles of the iron, a large portion of it and of the water, carbonic oxide, and other gases, is mechanically imprisoned in the stony substance of the meteorite. The idea is favoured of comets consisting of meteoric masses with the gases expanding under action of solar rays. Every cubic mile of a substance like the Kold Bokkeveld meteorite would give thirty cubic miles of gas at the pressure of our atmosphere, and in space this would expand enormously before it would cease to transmit electric discharges or be visible by reflected sunlight. These views are confirmed by spectroscopic observations of meteoric gases.—Mr. Storer, questioning Carius' statement that Schoenbein's iodo-starch test for nitrates used with zinc as reducing agent, is not a specially delicate one, finds that the fatal defect of the test, as hitherto applied, lies in the fact that mere water containing no nitrates or nitrites, on being treated with zinc or cadmium, as if to test for a nitrate, will react on iodo-starch just as if a trace of some nitrate were present. This coloration is due to peroxide of hydrogen formed in the water by action of the metal. Mr. Storer also finds that no peroxide of hydrogen is formed when water slightly acidulated with sulphuric acid is boiled on metallic cadmium; and as the reduction of nitrates and nitrites occurs readily in such solutions, the iodo-starch test can be thus applied for detection of nitrates with great certainty.—Mr. J. Lawrence Smith gives an account of a new meteoric stone which fell in 1865 in Wisconsin, and which is identical with the Meno-meteorite which fell in 1861.—Mr. Brooks gives a classified list of

rocks in the Huronian series south of Lake Superior, with remarks on their abundance, transitions, and geographical distribution; and Mr. Burnham furnishes a seventh catalogue of new double stars.

Poggendorff's *Annalen der Physik und Chemie*, No. 7, 1876.—We have here the second portion of Dr. Root's inaugural dissertation on dielectrical polarisation. He finds (1) that there is a dielectrical polarisation which takes less than 0.0000821 sec. to be perfectly developed; (2) that all solid dielectric bodies (sulphur not excepted) show, with continuous discharge or slow commutation, a dielectric reaction which, *eg.*, in arragonite is perceptible within 0.0208 sec., but no longer so beyond 0.007 sec.; (3) that in direction and *relative* size the principal axes of elasticity of Fresnel agree with Maxwell's principal axes of electro-elasticity; and (4) that only with the aid of Faraday's supposition that a perfect conduction everywhere accompanies polarisation, can the equation  $K = n^2$  (*i.e.*, the dielectric permeability = the square of the index of refraction) be brought into harmony with experience.—A third paper from M. Kohlrausch describes experimental researches on elastic reaction in torsion, expansion, and bending. It relates chiefly to stretching and bending of caoutchouc. The various phenomena are shown to agree with a formula previously given; and a remarkable result from his study of reaction generally is, that after successive deformations of opposite sign, movements of reaction may remain in an electric body, which may pass from one direction into the opposite.—Two methods of determining the indices of refraction of liquids and glass plates are described by M. Wiedemann.—Dr. Vogel communicates observations on the spectra of the planets. The light which all of them send us is, he considers, reflected sunlight; the well-established fact that there is aqueous vapour in the atmospheres of Jupiter and Saturn makes it improbable that they have (as has been supposed) so high a temperature as to be self-luminous. The further a planet is from the sun the more marked is the influence of the gaseous envelopes in production of spectroscopic dark bands.—M. von Rath, of Bonn, describes a number of mineralogical specimens, and M. Berthold makes a contribution to the history of the radiometer, to which we shall refer in a separate note.

## SOCIETIES AND ACADEMIES

### LONDON

Entomological Society, Sept. 6.—Mr. J. Jenner Weir, F.L.S., in the chair. Mr. Edward Boscher was elected a member.—Mr. Edward Saunders exhibited some recently-captured specimens of *Hymenoptera* and *Hemiptera*, many of them rare in this country, and made some remarks respecting the bug of the house-martin, of which he had taken eighteen specimens in the window-sills of a house.—Mr. Weir mentioned that on a recent visit to the South Downs he had suffered much annoyance from the attacks of harvest bugs, as many as eighty pustules appearing on each foot. Several remedies were suggested, especially rubbing the affected parts with brandy and water; but Mr. Smith stated that on one occasion when he was in the Isle of Wight and exposed to their attacks, he was effectually relieved from all annoyance by a dose of milk of sulphur.—Prof. Westwood communicated a note with reference to some shoots of horse-chestnut which he had exhibited at the July meeting, having been destroyed, apparently, by some Lepidopterous larvae or wood-boring beetles; but he had since received from Mr. Stainton some shoots that had been forwarded to him by Sir Thos. Moncrieffe, which had been destroyed by squirrels in precisely the same manner. Sir Thomas had himself seen the squirrels at work splitting the shoots with their teeth and extracting the pith. The Professor also stated that he had received from a correspondent in Oxfordshire specimens of the two small species of grasshoppers with long antennae *Mecorema varium*, Fab., and *Xiphidium clypeatum*, Panzer, which he had taken on a pear tree in his garden, where they had been regularly observed for the last five or six years. Mr. McLachlan said that the former insect was frequently observed by Lepidopterists when sugaring for moths.—Mr. Smith communicated the descriptions of three additional species of *Formicidae*, from New Zealand, which had been sent to him by Mr. David Sharp since his description of Mr. Wakefield's collection was in the press. Two of the species belonged to genera not previously ascertained, to inhabit New Zealand, namely *Amblyopone* and *Ponera*.—The following memoirs were read:—"Monograph of the dipterous genus

*Systropus*, with notes on the economy of a new species of that genus;" and "Descriptions of new genera and species of Acroceridae." Both were communicated by the President, Prof. Westwood.

### BOSTON

Natural History Society.—During the Session, 1875-6, Prof. N. S. Shaler has contributed several papers on physical geology, in one of which he attempted to account for the phenomena of several areas of glacial erosion. He is persuaded that the melting caused by pressure would put a limit to the accumulation of ice at a depth probably not exceeding two miles. This melting would give the ice-sheet a chance to move freely in the direction of least resistance. The flow of the melted water would account for stratification of moraine matter, and for the rounding of pebbles.—Mr. Osten Sacken has revised the North American species of the Dipteran genus *Syrphus*.—Dr. W. K. Brooks has made a contribution to the embryology of *Salpa*, which is starting to naturalists, and will be of great importance if confirmed. He says that in tracing back the history of the zooids composing a chain, the egg is present at all periods of growth, of exactly the same size and appearance as at the time of its impregnation. He concludes that the animal, which has no existence, cannot be the parent of the egg which is already fully formed. Thus the explanation is that the solitary *salpa* is the female, which produces a chain of males by budding, and discharges an egg into the body of each before birth. These eggs are impregnated while the zooids of the chain are very small and sexually immature, and develop into females which give rise to other males in the same way. After the fetus has been discharged from the body of the male, the latter attains its full size, becomes sexually mature, and discharges its spermatic fluid into the water, to gain access to the eggs of other immature chains. This arrangement is compared with other cases, as in cirripeds, arachnids, argonaut, in which the male is to some extent parasitic on, or supplemental to, the female.—Mr. T. T. Bouvé has further developed his views of the origin of porphyries from metamorphosed conglomerates.—Dr. Brooks's paper on the affinity of the mollusca and molluscoida is worthy of note. He concludes that Brachiopods are derived from Vermes; and Polyzoa from some primordial Brachiopod. The polyzoan stem gave off the molluscan veliger, from which the true mollusca have originated by several offshoots. The scaphopods appear to be the least specialised. The Lamellibranchs may be derived from one of these offshoots: they probably diverged early from the ancestral form, becoming degraded in certain respects and specialised in others. The president, Mr. T. T. Bouvé, gave a very interesting address on March 15, describing the origin and early proceedings of the society, its struggles with difficulties and ignorance, and the stages by which it has reached its present successful position. He stated that the society's museum, as now arranged, constituted a series of lessons in the structure of the earth and its constituent parts, and in the organisation of the plants and animals on its surface. Special lectures have been given to teachers, and other efforts have recently been made by the society for the spread of science.

### ROME

R. Accademia dei Lincei, February—April.—The following, among other papers, were read:—On the common origin of the Marian and Vatican hills, by M. Ponzi. They were formed by a great seismic oscillation which laid bare their entire stratigraphical arrangement. The marls at the base of the Vatican hill have yielded many organic remains representing the old sub-Apennine fauna of the upper miocene.—On alkaloids of viscera that have putrefied at a low temperature, by M. Selmi.—On the presence of organs of taste in the tongue of Saurians, by M. Todaro. Having indurated several tongues of *L. agilis* and *L. viridis*, made sections, and coloured with picrocarmine of ammonia, he found a large number of gustative organs about the papillae on the lateral margin of the tongue. They are similar in form and arrangement to those in mammals.—On a constant inductor, by M. Volpicelli (appendix to memoir). He had described one of the nature of a Leyden jar. Another consists of a dry pile, having 10,640 pasteboard discs, each covered with sheet-tin on one side and with peroxide of manganese on the other. One pole is coated with a good insulating varnish. The other communicates with the earth. The dry pile serves usefully in verifying the laws of electric action.—On artificial increase in the tenacity of cotton, by M. Manzoni.—On the inundations of the Tiber at Rome,